

IN THE CLAIMS:

The text of all pending claims are set forth below. Cancelled claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (previously presented), (cancelled), (withdrawn), or (new).

Please AMEND the claims in accordance with the following:

1. (Currently Amended) An apparatus for compressing a plurality of structured documents having a common data structure, said apparatus comprising:

a tag list obtaining unit for obtaining a single tag list, common to said plural structured documents, that lists markup tags in the order of appearance that they appear in the structured documents;

a structured document compressing unit for generating a plurality of compressed documents in which markup tags in individual said plural structured documents that correspond to the tag list are replaced in said plural structured documents with predetermined delimiter codes; and

an outputting unit for outputting said single tag list, which is obtained by said tag list obtaining unit, and also said plurality of compressed documents, which are generated individually from said plural structured documents by said structured document compressing unit, in correspondence with one another.

2. (Currently Amended) A structured document compressing apparatus according to claim 1, wherein said structured document compressing unit further comprises:

a tag detecting unit for detecting each markup tag in individual said structured documents; and

a tag replacement unit for replacing said markup tag, detected by said tag detecting unit, with said predetermined delimiter code.

3. (Currently Amended) An apparatus for compressing a structured document, said

apparatus comprising:

a tag detecting unit for detecting each markup tag in said structured document; and
a tag replacement unit for replacing said markup tag, detected by said tag detecting unit, with a predetermined delimiter code.

4. (Currently Amended) An apparatus for compressing a structured document, said apparatus comprising:

a subdocument extracting unit for extracting a subdocument, which is a region sandwiched between a start markup tag and an end markup tag that have a predetermined element name, from said structured document;

a tag detecting unit for detecting each markup tag in said subdocument extracted by said subdocument extracting unit; and

a tag replacement unit for replacing said markup tag, detected by said tag detecting unit, with a predetermined delimiter code.

5. (Currently Amended) A structured document compressing apparatus according to claim 3, further comprising:

an attribute-bearing-tag discriminating unit for discriminating whether or not said markup tag detected by said tag detecting unit is an attribute-bearing markup tag, which has an attribute value; and

an attribute-bearing-tag replacement unit for replacing said attribute-bearing markup tag, discriminated by said attribute-bearing-tag discriminating unit, with a set of the attribute value and a predetermined delimiter code.

6. (Currently Amended) A structured document compressing apparatus according to claim 4, further comprising:

an attribute-bearing-tag discriminating unit for discriminating whether or not said markup tag detected by said tag detecting unit is an attribute-bearing markup tag, which has an attribute value; and

an attribute-bearing-tag replacement unit for replacing said attribute-bearing markup tag, discriminated by said attribute-bearing-tag discriminating unit, with a set of the attribute value

and a predetermined delimiter code.

7. (Currently Amended) A structured document compressing apparatus according to claim 3, further comprising:

a tag list holding unit for holding a tag list in which markup tags are listed in a predetermined order for definition of a predetermined data structure;

a tag rearranging unit for rearranging markup tags in said structured document before compressed compression, in the predetermined order according to the tag list held in said tag list holding unit; and

an omitted-tag supplementing unit for supplementing a markup tag omitted in said structured document according to said tag list held in said tag list holding unit.

8. (Currently Amended) A structured document compressing apparatus according to claim 4, further comprising:

a tag list holding unit for holding a tag list in which markup tags are listed in a predetermined order for definition of a predetermined data structure;

a tag rearranging unit for rearranging markup tags in said structured document before compressed, in the predetermined order according to the tag list held in said tag list holding unit; and

an omitted-tag supplementing unit for supplementing a markup tag omitted in said structured document according to said tag list held in said tag list holding unit.

9. (Currently Amended) A structured document compressing apparatus according to claim 5, further comprising:

a tag/attribute list holding unit for holding a tag/attribute list in which markup tags and an attribute name are listed in a predetermined order for the definition of a predetermined data structure;

a tag/attribute rearranging unit for rearranging markup tags and an attribute in the structured document to be compressed, in the predetermined order according to the tag/attribute list held in said tag/attribute list holding unit; and

an omitted tag/attribute supplementing unit for supplementing a markup tag and/or an

attribute omitted in said structured document according to the tag/attribute list held in said tag/attribute list holding unit.

10. (Currently Amended) A structured document compressing apparatus according to claim 6, further comprising:

a tag/attribute list holding unit for holding a tag/attribute list in which markup tags and an attribute name are listed in a predetermined order for the definition of a predetermined data structure;

a tag/attribute rearranging unit for rearranging markup tags and an attribute in said structured document to be compressed, in the predetermined order according to the tag/attribute list held in said tag/attribute list holding unit; and

an omitted tag/attribute supplementing unit for supplementing a markup tag and/or an attribute omitted in said structured document according to the tag/attribute list held in said tag/attribute list holding unit.

11. (Currently Amended) A method for compressing a plurality of structured documents having a common data structure using a computer, said method comprising the steps of:

obtaining a single tag list, common to said plural structured documents, that lists markup tags in the order of appearance that they appear in the structured documents;

generating a plurality of compressed documents in which markup tags in individual said plural structured documents that correspond to the tag list are replaced in said plural structured documents with predetermined delimiter codes; and

outputting the single tag list and the plurality of compressed documents generated from said plural structured documents, in correspondence with one another.

12. (Currently Amended) A method for compressing a structured document using a computer, where the structured document comprises content and markup tags that are separate from the content and the markup tags structure the content, said method comprising the steps of:

detecting each markup tag in said structured document; and

replacing said markup tag with a predetermined delimiter code.

13. (Currently Amended) A method for compressing a structured document using a computer, said method comprising the steps of:

extracting a subdocument, which is a region sandwiched between a start markup tag and an end markup tag that have a predetermined element name, from said structured document; detecting each markup tag in said subdocument; and replacing said detected markup tag with a predetermined delimiter code.

14. (Currently Amended) A computer readable record medium which stores a structured document compressing program for instructing a computer to execute a function of compressing a plurality of structured documents having a common data structure, wherein said structured document compressing program instructs the computer to function as:

a tag list obtaining unit for obtaining a single tag list, common to said plural structured documents, that lists markup tags in the order of appearance that they appear in the structured documents;

a structured document compressing unit for generating a plurality of compressed documents in which markup tags in individual said plural structured documents that correspond to the tag list are replaced in said plural structured documents with predetermined delimiter codes; and

an outputting unit for outputting said single tag list, which is obtained by said tag list obtaining unit, and also said plurality of compressed documents, which are generated individually from said plural structured documents by said structured document compressing unit, in correspondence with one another.

15. (Currently Amended) A computer readable record medium which stores a structured document compressing program for instructing a computer to execute a function of compressing a structured document, wherein said structured document compressing program instructs the computer to function as:

a tag detecting unit for detecting each markup tag in said structured document; and a tag replacement unit for replacing said markup tag, detected by said tag detecting unit,

with a predetermined delimiter code.

16. (Currently Amended) A computer readable record medium which stores a structured document compressing program for instructing a computer to execute a function of compressing a structured document, wherein said structured document compressing program instructs the computer to function as:

a subdocument extracting unit for extracting a subdocument, which is a region sandwiched between a start markup tag and an end markup tag that have a predetermined element name, from said structured document;

a tag detecting unit for detecting each markup tag in said subdocument extracted by said subdocument extracting unit; and

a tag replacement unit for replacing said markup tag, detected by said tag detecting unit, with a predetermined delimiter code.

17. (Currently Amended) An apparatus for decompressing a plurality of compressed documents, which are generated by replacing markup tags in a plurality of original structured documents having a common data structure with predetermined delimiter codes, on the basis of a tag list in which markup tags in said plural original structured documents are listed in the order of appearance, said apparatus comprising:

a duplicating unit for expanding/duplicating a data structure corresponding to said tag list, as a duplicated data structure, on a memory; and

a writing unit for writing element contents of each of said compressed documents into predetermined regions of said duplicated data structure extended on said memory, in accordance with a correspondence between a position of a markup tag in said duplicated data structure and a position of the predetermined delimiter code in each of said compressed documents.

18. (Currently Amended) An apparatus for decompressing a compressed document generated by replacing markup tags in an original structured document with predetermined delimiter codes, said apparatus comprising:

a tag list holding unit for holding a tag list in which markup tags in said structured

document are listed in the order of appearance;

a delimiter code detecting unit for detecting each of the predetermined delimiter codes in said compressed document; and

a tag restoring unit for replacing the predetermined delimiter code, detected by said delimiter code detecting unit, with a corresponding markup tag on said tag list, in accordance with a correspondence between a position of the markup tag in said tag list and a position of the predetermined delimiter code detected by said delimiter code detecting unit.

19. (Currently Amended) An apparatus for decompressing a compressed document generated by replacing markup tags in a subdocument, which is a region, in an original structured document, sandwiched between a start markup tag and an end markup tag that have a predetermined element name, with predetermined delimiter codes, said apparatus comprising:

a tag list holding unit for holding a tag list in which markup tags in said subdocument are listed in the order of appearance;

a subdocument extracting unit for extracting said subdocument from said compressed document;

a delimiter code detecting unit for detecting each of the predetermined delimiter codes in said subdocument extracted by said subdocument extracting unit; and

a tag restoring unit for replacing the predetermined delimiter code, detected by said delimiter code detecting unit, with a corresponding markup tag on said tag list, in accordance with a correspondence between a position of the markup tag in said tag list and a position of the predetermined delimiter code detected by said delimiter code detecting unit.

20. (Currently Amended) A structured document decompressing apparatus according to claim 18, wherein if an attribute inside an attribute-bearing markup tag in said original structured document is replaced with a set of an attribute value and a predetermined delimiter code in said compressed document, said apparatus further comprises:

an attribute list holding unit for holding an attribute list in which attribute names in said compressed document are listed in the order of appearance;

an attribute-bearing-tag discriminating unit for discriminating whether or not a given markup tag to be restored by said tag restoring unit is an attribute-bearing markup tag; and

an attribute-bearing-tag restoring unit for restoring said attribute-bearing markup tag discriminated by said attribute-bearing-tag discriminating unit, in accordance with a correspondence between an attribute value for said attribute-bearing markup tag and an attribute name in said attribute list.

21. (Currently Amended) A structured document decompressing apparatus according to claim 19, wherein if an attribute inside an attribute-bearing markup tag in said original structured document is replaced with a set of an attribute value and a predetermined delimiter code in said compressed document, said apparatus further comprises:

an attribute list holding unit for holding an attribute list in which attribute names in said compressed document are listed in the order of appearance;

an attribute-bearing-tag discriminating unit for discriminating whether or not a given markup tag to be restored by said tag restoring unit is an attribute-bearing markup tag; and

an attribute-bearing-tag restoring unit for restoring said attribute-bearing markup tag discriminated by said attribute-bearing-tag discriminating unit, in accordance with a correspondence between an attribute value for said attribute-bearing markup tag and an attribute name in said attribute list.

22. (Currently Amended) A method for decompressing a plurality of compressed documents, which is generated by replacing markup tags in a plurality of original structured documents having a common data structure with predetermined delimiter codes, on the basis of a tag list in which markup tags in said plural original structured documents are listed in the order of appearance, said method comprising the steps of:

expanding/duplicating a data structure corresponding to said tag list, as a duplicated data structure, on a memory; and

writing element contents of each of said compressed documents into predetermined regions of said duplicated data structure extended on said memory, in accordance with a correspondence between a position of a markup tag in said duplicated data structure and a position of the predetermined delimiter code in each of said compressed documents.

23. (Currently Amended) A method for decompressing a compressed document

generated by replacing markup tags in an original structured document with predetermined delimiter codes, said method comprising ~~the steps of:~~:

holding a tag list in which markup tags in said structured document are listed in the order of appearance;

detecting each of the predetermined delimiter codes in said compressed document; and

replacing the detected predetermined delimiter code with a corresponding markup tag on said tag list, in accordance with a correspondence between a position of the detected predetermined delimiter code and a position of the markup tag in said tag list.

24. (Currently Amended) A method for decompressing a compressed document generated by replacing markup tags in a subdocument, which is a region, in an original structured document, sandwiched between a start markup tag and an end markup tag that have a predetermined element name, with predetermined delimiter codes, said method comprising ~~the steps of:~~:

holding a tag list in which markup tags in said subdocument are listed in the order of appearance;

extracting said subdocument from said compressed document;

detecting each of the predetermined delimiter codes in said extracted subdocument; and

replacing the detected predetermined delimiter code with a corresponding markup tag on said tag list, in accordance with a correspondence between a position of the detected predetermined delimiter code and a position of the markup tag in said tag list.

25. (Currently Amended) A computer readable record medium which stores a structured document decompressing program for instructing a computer to execute a function of decompressing a plurality of compressed documents generated by replacing markup tags, in a plurality of original structured documents having a common data structure, with predetermined delimiter codes on the basis of a tag list in which markup tags in said plural structured documents are listed in the order of appearance, wherein said structured document decompressing program instructs the computer to function as:

a duplicating unit for expanding/duplicating a data structure corresponding to said tag list, as a duplicated data structure, on a memory; and

a writing unit for writing element contents of each of said compressed documents into predetermined regions of said duplicated data structure extended on said memory, in accordance with a correspondence between a position of a markup tag in said duplicated data structure and a position of the predetermined delimiter code in each of said compressed documents.

26. (Currently Amended) A computer readable record medium which stores a structured document decompressing program for instructing a computer to execute a function of decompressing a compressed document generated by replacing markup tags, in an original structured document, with predetermined delimiter codes, wherein said structured document decompressing program instructs the computer to function as:

a delimiter code detecting unit for detecting each of the predetermined delimiter codes in said compressed document; and

a tag restoring unit for replacing the predetermined delimiter code, detected by said delimiter code detecting unit, with a corresponding markup tag on a tag list in which markup tags in said structured document are listed in the order of appearance, in accordance with a correspondence between a position of the markup tag in said tag list and a position of the predetermined delimiter code detected by said delimiter code detecting unit.

27. (Currently Amended) A computer readable record medium which stores a structured document decompressing program for instructing a computer to execute a function of decompressing a compressed document generated by replacing markup tags in a subdocument, which is a region, in an original structured document, sandwiched between a start markup tag and an end markup tag that have a predetermined element name, with predetermined delimiter codes, wherein said structured document decompressing program instructs the computer to function as:

a subdocument extracting unit for extracting said subdocument from said compressed document;

a delimiter code detecting unit for detecting each of the predetermined delimiter codes in said subdocument extracted by said subdocument extracting unit; and

a tag restoring unit for replacing the predetermined delimiter code, detected by said

delimiter code detecting unit, with a corresponding markup tag on a tag list in which markup tags in said subdocument are listed in the order of appearance, in accordance with a correspondence between a position of the markup tag in said tag list and a position of the predetermined delimiter code detected by said delimiter code detecting unit.

28. (Currently Amended) A structured document processing system for processing a plurality of structured documents having a common data structure, comprising a structured document compressing apparatus for compressing said plurality of structured documents and a structured document decompressing apparatus for decompressing the data compressed by said structured document compressing apparatus, wherein

 said structured document compressing apparatus comprises:

 a tag list obtaining unit for obtaining a single tag list, common to said plural structured documents, that lists markup tags in the order-of-appearance that they appear in the structured documents;

 a structured document compressing unit for generating a plurality of compressed documents in which markup tags in individual said plural structured documents that correspond to the tag list are replaced in said plural structured documents with predetermined delimiter codes; and

 an outputting unit for outputting said single tag list, which is obtained by said tag list obtaining unit, and also said plurality of compressed documents, which are generated individually from said plural structured documents by said structured document compressing unit, in correspondence with one another, and wherein

 said structured document decompressing unit comprises:

 a duplicating unit for expanding/duplicating a data structure corresponding to said tag list, as a duplicated data structure, on a memory; and

 a writing unit for writing element contents of each of said compressed documents into predetermined regions of said duplicated data structure extended on said memory, in accordance with a correspondence between a position of a markup tag in said duplicated data structure and a position of the predetermined delimiter code in each of said compressed documents.

29. (Currently Amended) A structured document processing system for processing a structured document, comprising a structured document compressing apparatus for compressing said structured document and a structured document decompressing apparatus for decompressing the data compressed by said structured document compressing apparatus, wherein

 said structured document compressing apparatus comprises:

 a tag detecting unit for detecting each markup tag in said structured document; and

 a tag replacement unit for replacing said markup tag, detected by said tag detecting unit, with a predetermined delimiter code, and wherein

 said structured document decompressing apparatus comprises:

 a tag list holding unit for holding a tag list in which markup tags in said structured document are listed in the order of appearance;

 a delimiter code detecting unit for detecting each of the predetermined delimiter codes in the data compressed by said structured document decompressing apparatus; and

 a tag restoring unit for replacing the predetermined delimiter code, detected by said delimiter code detecting unit, with a corresponding markup tag on said tag list, in accordance with a correspondence between a position of the markup tag in said tag list and a position of the predetermined delimiter code detected by said delimiter code detecting unit.

30. (Currently Amended) A structured document processing system for processing a structured document, comprising a structured document compressing apparatus for compressing said structured document and a structured document decompressing apparatus for decompressing the data compressed by said structured document compressing apparatus, wherein

 said structured document compressing apparatus comprises:

 a first subdocument extracting unit for extracting a subdocument, which is a region sandwiched between a start markup tag and an end markup tag that have a predetermined element name, from said structured document;

 a tag detecting unit for detecting each markup tag in said subdocument extracted by said first subdocument extracting unit; and

a tag replacement unit for replacing said markup tag, detected by said markup tag detecting unit, with a predetermined delimiter code, and wherein

said structured document decompressing apparatus comprises:

a tag list holding unit for holding a tag list in which markup tags in said subdocument are listed in the order of appearance;

a second subdocument extracting unit for extracting said subdocument from the data compressed by said structured document compressing apparatus;

a delimiter code detecting unit for detecting each of the predetermined delimiter codes in said subdocument extracted by said second subdocument extracting unit; and

a tag restoring unit for replacing the predetermined delimiter code, detected by said delimiter code detecting unit, with a corresponding markup tag on said tag list, in accordance with a correspondence between a position of the markup tag in said tag list with a position of the predetermined delimiter code detected by said delimiter code detecting unit.

31. (Original) A structured document processing system according to claim 29, further comprising:

a tag-list-group holding unit for holding a plurality of tag lists corresponding to data structures of structured documents that can possibly be processed; and

a tag list managing unit for managing correspondence between compressed documents generated by said structured document compressing apparatus and said tag lists held in said tag-list-group holding unit.

32. (Original) A structured document processing system according to claim 30, further comprising:

a tag-list-group holding unit for holding a plurality of tag lists corresponding to data structures of structured documents that can possibly be processed; and

a tag list managing unit for managing correspondence between compressed documents generated by said structured document compressing apparatus and said tag lists held in said tag-list-group holding unit.

33. (Original) A structured document processing system according to claim 29, further

comprising:

a tag-list-group holding unit for holding a plurality of tag lists corresponding to data structures of structured documents that can possibly be processed;

a tag-list identification information adding unit for adding tag-list identification information, which identifies a tag list that corresponds to a compressed document generated by said structured document compressing apparatus, to said compressed document; and

a tag-list identification information obtaining unit for obtaining said tag-list identification information added to said compressed document,

said structured document decompressing apparatus decompressing said compressed document using said tag list that corresponds to said tag-list identification information obtained by said tag-list identification information obtaining unit.

34. (Original) A structured document processing system according to claim 30, further comprising:

a tag-list-group holding unit for holding a plurality of tag lists corresponding to data structures of structured documents that can possibly be processed;

a tag-list identification information adding unit for adding tag-list identification information, which identifies a tag list that corresponds to a compressed document generated by said structured document compressing apparatus, to said compressed document; and

a tag-list identification information obtaining unit for obtaining said tag-list identification information added to said compressed document,

said structured document decompressing apparatus decompressing said compressed document using said tag list that corresponds to said tag-list identification information obtained by said tag-list identification information obtaining unit.

35. (Original) A structured document processing system according to claim 31, wherein said tag-list-group holding unit is provided on a management server, which is communicably connected with said structured document compressing apparatus and with said structured document decompressing apparatus via a network, and a tag list necessary for the processing is read from said tag-list-group holding unit on said management server.

36. (Original) A structured document processing system according to claim 32, wherein said tag-list-group holding unit is provided on a management server, which is communicably connected with said structured document compressing apparatus and with said structured document decompressing apparatus via a network, and a tag list necessary for the processing is read from said tag-list-group holding unit on said management server.

37. (Original) A structured document processing system according to claim 33, wherein said tag-list-group holding unit is provided on a management server, which is communicably connected with said structured document compressing apparatus and with said structured document decompressing apparatus via a network, and a tag list necessary for the processing is read from said tag-list-group holding unit on said management server.

38. (Original) A structured document processing system according to claim 34, wherein said tag-list-group holding unit is provided on a management server, which is communicably connected with said structured document compressing apparatus and with said structured document decompressing apparatus via a network, and a tag list necessary for the processing is read from said tag-list-group holding unit on said management server.